

IMBEDDED VINYL FLOORING PRODUCT

BACKGROUND OF THE INVENTION

[0001] This application is a divisional patent application claiming the priority of U.S. Patent Application No. 10/125,290.

[0002] The present invention relates to a vinyl flooring product having a design visible from a top surface of the product, and more particularly to a vinyl flooring product having an imbedded web creating a pattern visible from above.

[0003] Vinyl is often applied to the back of carpet tile. Vinyl is also utilized to create flooring products. Textures have been added to the surface of some vinyl flooring products as described in U.S. Patent No. 4,379,185. However, a need still exists to provide an improved flooring product, especially one with superior aesthetics.

SUMMARY OF THE INVENTION

[0004] Consequently, it is an object of the present invention to provide a vinyl flooring product having improved aesthetics, and particularly such a product which utilizing a mesh, screen or scrim, hereafter a skeletal framework, which is imbedded into a top surface of the vinyl and then cured in an oven. The finished product produces a pattern which has a top portion of the skeletal framework exposed through a top surface of the cured vinyl or has valleys in a top surface of the vinyl where the mesh has been imbedded which resembles the skeletal framework.

[0005] Vinyl at least partially fills the voids, or openings, between runners in the skeletal framework. Anticipated skeletal framework material include metal and nylon. Further processing

may be performed on the imbedded vinyl including, but not limited to, cutting into squares, and/or coating with a clear protective coating.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The particular features and advantages of the invention as well as other objects will become apparent from the following description taken in connection with the accompanying drawings in which:

Figure 1 is a top elevational view of a skeletal framework in the form of a mesh utilized in the present invention;

Figure 2 is a top elevational view of a first embodiment of the mesh imbedded vinyl product of the present invention utilizing the mesh of Figure 1;

Figure 3 is a top elevational plan view of a second embodiment of the present invention utilizing the mesh of Figure 1;

Figure 4 is a cross sectional view of the second embodiment of Figure 3;

Figure 5 is a cross-sectional view of a first portion of the first embodiment of Figure 2;

Figure 6 is a cross-sectional view of a second portion of the first embodiment of Figure 2;
and

Figure 7 is a diagramic view of a process of making the mesh imbedded vinyl of Figures 2 and 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0007] Figure 1 shows a skeletal framework in the form of a mesh **10** for use in imbedding into a vinyl substrate. The mesh **10** has limbs or runners **32** which circumscribe openings **34**. The runners **32** meet at one or more junctures **35,37**. The runners **32** have top surfaces **36** and bottom

surfaces 37 as shown in Figure 4. While Figure 1 shows one design of a metal skeletal framework in the form of a mesh, or screen, many other designs could be utilized including those with round openings, square openings, or other shaped openings. Furthermore, all openings 34 need not be identically shaped in a particular mesh. The mesh 10 could also be nylon or other appropriate material.

[0008] Figures 2 and 3 show the mesh 10 installed in vinyl flooring products 12,14. Figures 4-6 show cross sectional portions of Figures 2 and 3 at various locations.

[0009] Vinyl is often utilized to back carpet tile. Vinyl forms a relatively thin layer which is adhered to a back side of carpet to form tile. The thin layer is usually formed by pouring liquid vinyl onto a conveyor belt which is then transported through an oven to cure as a sheet of vinyl or the back of a tufted carpet.

[0010] Figure 7 shows a diagram of a method of imbedding a mesh into a vinyl substrate. A conveyor 20 is utilized to transport a film of liquid vinyl provided from the supply 22. Before entering the oven 24 to cure into a solid form, a mesh 26 is placed on a top surface of the liquid vinyl. Imbedders, such as rollers 28, may be utilized to selectively adjust the depth of the mesh 26 relative to the top surface exposed vinyl portions during the imbedding process. The various designs produced will be explained in more detail below depending upon the depth and contour, such as provided by multi-depths. The composite unit is then transported by conveyor 20 into the oven 24 and cured. Curing at 250-275 degrees Fahrenheit has been found to adequately cure the liquid vinyl into a solid vinyl sheet as it passes through the oven 24. After leaving the oven 24, the composite product with the vinyl cured, and at least mechanically connected to the mesh 26, may

then be further processed, such as by rolling into rolls, cutting into tiles, adding additional layers or colors, etc....

[00011] The depth at which the mesh 10 is imbedded into the liquid vinyl has a large influence on the design of the flooring product after curing in the oven 24. Figures 3 and 4 represent a first product 14 and a cross sectional portion of the first product 14 respectively.

[00012] The first product 14 enters the oven 24 with the mesh 10 only slightly depressed into the liquid vinyl. The bottom surface 37 of the runners 32 is below the top surface 44 of the vinyl. The vinyl forms a vinyl bottom layer 42 which forms a non-porous sheet surface which extends below the mesh 10. Slight wicking of vinyl may be observed on walls 30 of runners 32 of the first mesh 10 within the openings 34 between runners 32. The first product 14 may have vinyl which wicks up toward a top surface 36 of the first mesh 10 and forms a bubble 38, or well, within the openings 34. The top surface 36 of the first mesh 10 is not obscured from view by cured vinyl 40. A bottom vinyl layer 42 extends below the bubbles 38, or wells, and first mesh 10. It is possible that the bubbles 38 may extend above the top surface 36 of the mesh, but they do not overhang to obscure the first mesh 10 from view in this embodiment. In other embodiments, overhanging occurs.

[00013] A second vinyl product 12 is shown in Figures 2, 5 and 6. The second product 12 is constructed in a similar manner as the first product 14, except that the imbedder 28 places the mesh at a greater depth than is done in the first product 14. In the second product 12, the vinyl extends through the openings 34 and extends over at least some of the top surface 36 of the first mesh 10 as an overhang. Figure 5 shows a cross section of second product 12 such as taken along the left side of Figure 2, while Figure 6 shows a cross section of product taken along the middle of Figure 2.

[00014] In Figure 5, the top surface 44 extends above the top surface 36 of the first mesh 10, however at least a portion of the top surface 36 is still visible. The bubble 46 with the top surface 44 may, or may not, have an overhang 48 which extends over a portion of the top surface 36 of the mesh. This creates the look illustrated in Figure 2 at the left side of that Figure. If more pressure is applied during the imbedding process, and/or if the first mesh 10 is applied at a deeper depth, then the product of Figure 6 and certain portions of the center of Figure 2 may be created.

[00015] In Figure 6, the bubbles 46 once again extend above the top surface 36 of the first mesh 10. However, in this embodiment, the top surface 36 of the first mesh 10 is no longer visible. Nevertheless, valleys 50 are created between the bubbles 46 where the first mesh 10 has been imbedded into the vinyl. Both embodiments of Figures 5 and 6 have vinyl throughout the openings 34 intermediate the runners 32.

[00016] At the center of Figure 2, due to the change in thickness of where the runners 32 meet relative to the arms 32 themselves, parts of the cross section would resemble Figure 5, while parts would resemble Figure 6. This also creates a possible design choice. With other mesh designs, other designs can be created. Additionally, the depth of imbedding the mesh 10 may vary across different portions of the flooring product to create still further design choices.

[00017] Numerous alternations of the structure herein disclosed will suggest themselves to those skilled in the art. However, it is to be understood that the present disclosure relates to the preferred embodiment of the invention which is for purposes of illustration only and not to be construed as a limitation of the invention. All such modifications which do not depart from the spirit of the invention are intended to be included within the scope of the appended claims.

[00018] Having thus set forth the nature of the invention, what is claimed herein is: